tion that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

HIGH WINDS.

Maximum wind velocities of 50 miles or more per hour were reported during this month at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				*Miles*	
Cincinnati, Ohio	1	50	nw.	Omaha, Nebr	15	50	ne.
Cleveland, Ohio	10	58	w.	Port Huron, Mich	8	52	n.
Milwaukee, Wis	9	52	w.	St. Paul, Minn	4	60	nw.
New York, N. Y	9	50	nw.	Winnemucca, Nev	30	50	w.

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—The dates on which reports of thunderstorms for the whole country were most numerous were: 9th, 239; 10th, 230; 13th, 208; 14th, 235; 15th, 208; 16th, 216; 22d, 224.

Thunderstorm reports were most numerous in: Michigan, 229; Missouri, 270; North Carolina, 221; Ohio, 284.

Thunderstorms were most frequent in: Colorado, 26 days; Florida and New Mexico, 31; Louisiana, 28; Mississippi and Missouri, 25.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 18th to the 26th, inclusive. On the remaining twenty-two days of this month 216 reports were received, or an average of about 10 per day. The date on which the number of reports especially exceeded this average were: 1st, 30; 6th, 73; 9th, 25.

Auroras were reported by a large percentage of observers, as follows: North Dakota, 82; Montana, 62; Minnesota, 43; Michigan, 18.

Auroras were reported most frequently in: North Dakota, 14 days; Minnesota, Montana, and Wisconsin, 11; Michigan, 7.

CANADIAN REPORTS.

Thunderstorms were reported as follows: St. Johns, 3d; Halifax, 19th; Yarmouth, 9th, 10th, 19th; Charlottetown, 4th, 5th; Chatham and Father Point, 9th; Quebec, 4th, 7th, 16th; Montreal, 9th, 16th, 23d; Rockliffe, 6th, 29th; Toronto, 5th, 6th, 10th, 12th, 23d. Ottawa, 9th, 16th; Port Stanley, 1st, 2d, 6th, 8th to 12th, 16th, 23d, 26th; Saugeen, 5th, 8th, 18th, 23d, 30th; Parry Sound, 5th 8th, 15th, 23d, 26th, 29th, 30th; Port Arthur, 14th, 20th, 25th; Winnipeg, 2d, 21st; Minnedosa, 1st, 2d, 3d, 5th, 7th, 9th, 11th; Qu'Appelle, 8th, 10th, 19th, 20th; Medicine Hat, 2d, 9th, 12th, 13th; Swift Current, 2d, 9th, 11th, 16th, 20th; Calgary, 19th; Prince Albert, 7th, 8th, 18th, 19th.

Auroras were reported as follows: Sydney, 1st, 6th, 29th; Halifax, 1st; Yarmouth, 1st, 17th, 19th; Charlottetown, 1st, 6th, 29th; Father Point, 2d, 4th, 12th, 13th, 14th, 17th, 19th; Quebec, 1st, 2d, 4th, 7th, 9th, 17th, 20th, 24th, 29th; Montreal, 9th, 17th; Rockliffe, 7th, 8th; Toronto, 17th; Parry Sound, 6th; Port Arthur, 7th; Winnipeg, 9th, 12th, 13th, 17th, 19th, 26th, 27th; Minnedosa, 6th, 9th, 12th, 13th, 19th; Qu'Appelle, 1st; Medicine Hat, 16th, 19th; Calgary, 6th; Prince Albert, 1st, 6th, 8th, 10th, 18th, 21st, 25th.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers for the current month are given in Table VIII, from which it appears that the Ohio, at Evansville, Ind., was 0.5 above the danger line on the 6th. The only other river that approached danger was the Wabash, at Mount Carmel, Ill., on the 1st. No special reports of damage were made in either of these cases, and, in general, the rivers maintained their usual summer stage.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 82.2°, or 3.3° above normal; the highest was 106°, at Thomasville on the 1st, and the lowest, 50°, at Newburgh on the 28th. The average precipitation was 2.30, or 1.71 below normal; the greatest monthly amount, 9.22, occurred at Daphne, and the least, 0.40, at Scottsboro. The drought which had its beginning during the second decade of July over the central and northern portions of the State has continued practically unbroken during the present month. The effect of the weather on growing crops has been very unfavorable, cutting short the prospective yield of all very materially. All large streams are very low, and the smaller creeks, in many instances, are entirely dry. There is complaint of scarcity of water for stock from the central and western portions of the State.

Arkansas.—The mean temperature was 82.6°, or 4.5° above normal; the highest was 112°, at Malvern on the 6th, and the lowest, 48°, at Camden and Keesees Ferry on the 29th. The average precipitation was 2.32, or 0.90 below normal; the greatest monthly amount, 5.75, occurred at Marvell, and the least, 0.50, at Fulton. The drought that prevailed during July was not generally broken until August 18 and 19. This prolonged dry weather, together with the abnormal heat, did great damage to cotton and corn, the former being almost a total failure on the uplands and generally a poor crop on the lowlands. Corn is a very poor crop. The rains during the latter part of the month were beneficial to minor crops and pastures and enabled farmers to begin stubble breaking, and many began sowing rye and oats for winter pasture.

California.—The mean temperature was 73.8°, or 0.1° above normal; the highest was 125°, at Volcano Springs, and the lowest, 26°, at Bodie on the 3d. The average precipitation was 0.32, or 0.29 above normal; the greatest monthly amount, 1.83, occurred at Bodie, while none fell at various places.

Colorado.—The mean temperature was 66.0°, or 1.0° above normal; the highest was 107°, at Lamar on the 9th and 10th, and the lowest, 26°, at Cameron Pass on the 23d. The average precipitation was 1.68, or about normal; the greatest monthly amount, 4,96, occurred at Thon, and the least, 0.27, at Saguache.

Florida.—The mean temperature was 82.0°, or 0.2° above normal; the highest was 100°, at McClenny on the 18th, and the lowest, 58°, at Emerson on the 30th. The average precipitation was 5.81, or 1.93 below normal; the greatest monthly amount, 14.57, occurred at Manatee, and the least, "trace," at Carrabelle. High temperatures and absence of well distributed rains during the first two decades caused a rapid deterioration of nearly all crops, but markedly so of cotton and corn, while minor crops were by no means exempt from injury

Idaho.—The mean temperature was 66.3°; the highest was 103°, at Payette on the 23d, and the lowest, 28°, at Chesterfield on the 5th. The average precipitation was 0.87; the greatest monthly amount, 2.18, oc-

curred at Murray, while no rain fell at Birch Creek and Minidoka.

Illinois.—August was a month of nearly normal temperature and slightly less than normal rainfall. The temperature departure for the State, as a whole, was +1.2°, while the rainfall departure was —0.21. The first half of the month was quite steadily warm and the last half, with slight interruption, cool. The great warm wave which extended from the 4th to the 11th carried the temperature to 100° in each section of the State, and a maximum temperature of 108° was recorded during this period at Mascoutah, St. Clair Co. A number of stations in the southern section had maximum temperatures which averaged above 90° for the month. The last half of the month was mostly cool, the 26th to the 28th being the coolest days, during which period minimum temperatures below 50° were recorded in each section of the State. Light frosts were observed on the mornings of the 27th and 28th in a few northern counties, but little or no damage resulted. The lowest temperature recorded was 37°, at Walnut, on the morning of the 26th. The range of temperatuare for the State was thus 71°, while the average greatest daily range was 33°. The rainfall of the month came in thundershowers, and neighboring stations measured amounts which vary greatly. The southern section did not receive half the normal fall, many counties were practically without rain. The greatest fall measured was 7.96 inches at Laharpe, and the least, 0.44, at Plumhill.

Iowa.—The mean temperature was 71.7°, or 0.7° above normal; the highest was 104°, at Estherville on the 7th and Madrid on the 8th, and the lowest, 34°, at Northwood on the 17th and Rock Rapids on the 27th. The average precipitation was 3.52, or about normal; the greatest monthly amount, 12.25, occurred at Centerville, and the least, 0.86, at Sioux City.

Louisiana.—The mean temperature was 83.2°, or 2.7° above normal; the highest was 1.10°, at Liberty Hill on the 1st, and the lowest, 48°, at White Sulphur Springs on the 27th. The average precipitation was 3.10, or 2.20 below normal; the greatest monthly amount, 8.99, occurred at Melville, and the least, 0.77, at Liberty Hill.

Michigan.—The mean temperature was 68.2°, or 1.6° above normal; the highest, 98°, occurred at a large number of stations in the southern part of the State on the 8th, and the lowest, 28°, at Lathrop on the 19th. The average precipitation was 4.08, or 1.84 above normal; the greatest monthly amount, 7.63, occurred at Ovid, and the least, 1.34, at Muskegon. The long continued hot spell which extended from August 4 to 12 was one of the most severe ever known. While the maximum temperatures were not by any means phenomenal, nor the high night temperatures unprecedented, the long drawn out period which they covered and the exceedingly humid condition of the atmosphere made this hot period one of the most fatal which has ever been known.

Minnesota.—The mean temperature was 67.9°; the highest was 104°, at Lesueur and Mazeppa on the 4th, and the lowest, 29°, at Breese on the 31st. The average precipitation was 2.28; the greatest monthly amount, 5.27, occurred at Maple Plain, and the least, 0.34, at New Ulm.

Mississippi.—The mean temperature was 82.6°, or 2.6° above normal; the highest was 107°, at Water Valley on the 1st and Yazoo City on the 2d, and the lowest, 47°, at French Camp on the 28th. The average precipitation was 2.75, or 1.21 below normal; the greatest monthly amount, 9.29, occurred at Bay St. Louis, and the least, 0.02, at Palo Alto. Agricultural interests have been unfavorably affected as to growth and yield by the deficiency of moisture in the central and northern portions of the State, and some damage was sustained in the southern counties by heavy rains and wind which beat out and stained the cotton. The dry weather has been favorable, however, to cotton picking, the gathering of corn, pulling of fodder, and saving of hay. Water stages have been low in all streams, and live stock has suffered seriously in some sections remote from the larger water courses.

Missouri.—The mean temperature was 76.3°, or 1.5° above normal; the highest was 108°, at Grovedale on the 6th, and the lowest, 41°, at the same place on the 28th. The average precipitation was 3.32, or 0.17 above normal; the greatest monthly amount, 8.45, occurred at Irena, and the least, 0.38, at Zeitonia. In the extreme northern counties there was sufficient moisture for all purposes throughout the month, some localities, in fact, received much more than was needed, but over the greater portion of the central and southern sections droughty conditions prevailed until the 15th and in some localities during the entire month. In those sections corn and other growing crops were already suffering from drought, to a greater or less extent, at the opening of the month, and the continued dry weather resulted in serious injury in many counties. In a few of the southern counties late corn was almost ruined except for fodder. Apples and late peaches were also seriously injured by the sun and hot, dry winds.

Montana.—The mean temperature was 64.0°, or 4.0° below normal; the highest was, 103°, at Musselshell on the 1st, and the lowest, 28°, at Kipp on the 11th. The average precipitation was 0.93, or 0.15 above normal; the greatest monthly amount, 2.28, occurred at Columbia Falls, and the least, 0.03, at St. Paul's Mission. Thunderstorms were quite frequent and violent, resulting in loss of life and destruction of property.

Nebraska.—The mean temperature was 73.3°, or 0.6° above normal; the highest was 107°, at Madrid on the 3d, and the lowest, 34°, at Kennedy on the 17th. The average precipitation was 1.81, or 0.81 below normal; the greatest monthly amount, 8.43, occurred at Beatrice; no rain fell at Dunning.

Nevada.—The mean temperature was 69.0°, or 2.5° below normal; the highest was 109°, at St. Thomas on the 12th, and the lowest, 34°, at Wells on the 4th. The average precipitation was 0.82, or 0.47 above normal; the greatest monthly amount, 3.05, occurred at Palmetto; no rain fell at several stations.

New England.—The mean temperature was 67.8°, or 0.9° above normal; the highest was 100°, at Gardiner, Me., on the 12th, and the lowest, 28°, at West Milan, N. H., on the 1st. The average precipitation was 3.17, or 1.18 below normal; the greatest monthly amount, 5.02, occurred at Belfast and Cornish, Me., and the least, 1.38, at Nantucket, Mass. From the 5th to 13th there prevailed a spell of continuous and unusually hot weather. The maximum was not generally so high as has been experienced at other times, but the accumulated heat for the week was probably greater at most places than has ever been recorded. Prostrations from the effects of the heat and moisture were frequent and general, and the number of deaths due directly to that cause in Boston alone, is given at 68 by the City Board of Health.

New Jersey.—The mean temperature was 73.6°, or 1.6° above normal; the highest was 105°, at Toms River on the 6th and 9th, and the lowest, 39°, at Charlotteburg on the 29th and 30th. The average precipitation was 1.83, or 2.91 below normal; the greatest monthly amount; 3.27, occurred at Dover, and the least, 0.50, at Beverly.

New Mexico.—The mean temperature was about normal; the highest was 104°, at Los Luuas on the 13th, and the lowest, 32°, at Labelle on the 27th. The average precipitation was slightly below normal; the greatest monthly amount, 4.88, occurred at Alma, and the least, 0.31, at Rincon.

New York.—The mean temperature was 69.4°, or 1.3° above normal; the highest was 98°, at Bloomville on the 6th and 8th, and at Westfield on the 10th; the lowest was 33°, at Friendship on the 20th and 29th, and at South Kortright and New Lisbon on the 29th. The average precipitation was 3.14, or 0.53, below normal; the greatest monthly amount, 5.95, occurred at Plattsburg Barracks, and the least, 0.72, at Appleton.

North Carolina.—The mean temperature was 77.7°, or 1.9° above normal; the highest was 105°, at Saxon on the 9th, at Tarboro on the 10th, and at Goldsboro on the 11th; the lowest was 41°, at Linnville on the 30th. The average precipitation was 2.31, or 3.56 below normal; the greatest monthly amount, 5.48, occurred at Fairbluff, and the least, 0.73, at Oakridge.

North Dakota.—The mean temperature was 64.7°, or 3.0° below normal; the highest was 107°, at Medora on the 2d, and the lowest, 21°, at McKinney on the 27th. The average precipitation was 1.39, or 0.39 below normal; the greatest monthly amount, 4.55, occurred at Berlin, and the least, "trace," at Bottineau and Willow City.

Ohio.—The mean temperature was 73.2°, or 1.3° above normal; the highest was 102°, at Ottawa on the 9th and Thurman on the 10th, and the lowest, 35°, at Auburn on the 29th and 30th. The average precipitation was 3.38, or 0.29 above normal; the greatest monthly amount, 9.35, occurred at New Paris, and the least, 1.35, at Greenfield.

Oklahoma.—The mean temperature was 84.2°; the highest was 115°, at Healdton on the 2d, and the lowest, 48°, at Clifton and Pond Creek on the 24th. The average precipitation was 1.46; the greatest monthly amount, 3.31, occurred at Fort Reno, and the least, 0.34, at Beaver.

Oregon.—The mean temperature was 65.7°, or 0.5° below normal; the highest was 103°, at Grants Pass on the 22d, and the lowest, 29°, at Burns on the 3d and Fort Klamath on the 4th. The average precipitation was 1.04, or 0.74 above normal; the greatest monthly amount, 2.98, occurred at Government Camp, a mountain station, 7,000 feet above sea level.

Pennsylvania.—The mean temperature was 71.2°, or 1.3° above normal; the highest was 101°, at Aqueduct on the 9th and Honesdale on the 11th, and the lowest, 35°, at Dyberry and Saegerstown on the 29th. The average precipitation was 2.22, or 2.06 below normal; the greatest monthly amount, 6.53, occurred at West Newton, and the least, 0.45, at Ottsville.

South Carolina.—The mean temperature was 80.4°, or 1.6° above nornormal; the highest was 105°, at Gillisonville on the 10th, and the lowest, 52°, at Central on the 30th. The average precipitation was 4.14, or 1.99 below normal; the greatest monthly amount, 10.21, occurred at Kingstree, and the least, 1.02, at Clemson College. All crops deteriorated steadily during the month. The promising conditions of the previous month declined rapidly. Most crops ripened prematurely, especially cotton which opened very fast during the latter portion. It stopped fruiting or shed its fruit and even shed half grown bolls. Picking cotton began actively earlier than ever before known or recorded within the last fifty years. Much of the late corn began to dry before ears had formed on it.

South Dakota.—The mean temperature was 70.5°, or 1.7° above normal; the highest was 109°, at Nowlin on the 2d, and the lowest, 30°, at Castlewood on the 30th. The average precipitation was 1.22, or about 1.00 below normal; the greatest monthly amount, 3.23, occurred at Webster, and the least, 0.03, at Nowlin.

Tennessee.—The mean temperature was 78.1°, or about 3.0° above nor-

mal; the highest was 104°, at Covington on the 7th and 8th, and the lowest, 49°, at St. Joseph, on the 28th. The average precipitation was 1.75, or nearly 2.00 below normal; the greatest monthly amount, 7.63, occurred at Bristol, and the least, 0.07, at Fairmont.

Texas.—The mean temperature was 2.5° above the normal; there was a general excess except over the extreme western portion of the State, where it ranged from about normal to 0.8° below in the vicinity of El Paso. The excess in temperature ranged from 0.5° to 2.6° over the southwestern and the coast districts; from 2.9° to 3.4° over the central and eastern portions, and from 1.9° to 4.9° over the northern and Panhandle portions, with the greatest in the vicinity of Paris. Maximum temperature, 113°, observed at Panter, on the 2d, and 109° from self-recording thermometers, at Sulphur Springs on the 3d and 8th; minimum, 50°, at Dean on the 22d and 23d. The average precipitation for the State was 2.01 below the normal. There was a general deficiency throughout the State, ranging from 0.71 to 2.05 over the north, central, west, and southwest portions; from 1.49 to 2.34 over the Panhandle and eastern portions, and from 2.56 to 5.19 over the coast district, with the greatest in the vicinity of Galveston. The rainfall was generally light and not well distributed, there being very little during the first and second decades. The greatest monthly amount, 4.78, occurred at Fort Worth, while none fell at Point Isabel and Round Rock.

Utah.—The mean temperature was 69.7°, or about 5.0° below normal; the highest was 107°, at St. George on the 13th and 14th, and the lowest, 33°, at Soldier Summit on the 20th. The average precipitation was 1.04, or slightly above normal; the greatest monthly amount, 3.00, occurred at Parowan, and the least, 0.05, at Park City.

Virginia.—The mean temperature was 75.7°, or 0.7° above normal; the highest was 105°, at Nottoway Courthouse, and the lowest, 32°, at Guinea on the 20th. The average precipitation was 2.78, or about 0.80 below normal; the greatest monthly amount, 7.63, occurred at Bristol, and the least, 0.10, at Birdsnest. The thermal conditions for the month of August were noteworthy. Opening with means about normal, the temperature rose steadily, holding from 2° to 10° above the average and yielding maximums each day ranging between 90° and 105° from the 3d to the 16th. This phenomenal heat was accentuated by a most oppressive and debilitating sultriness, general absence of cloudiness and rainfall, and burning southerly winds. As a result, sunstrokes and heat prostrations were numerous and crops of all kinds suffered severely, cotton, peanuts, tobacco, late corn, and pastures, especially.

Washington.—The mean temperature was 65.3°, or 0.3° above normal; the highest was 104°, at Fort Simcoe on the 13th, and the lowest, 20°, at Cascade Tunnel on the 19th and 20th. The average precipitation was 0.85, or 0.24 above normal; the greatest monthly amount, 2.48, occurred at Tatoosh Island, and the least, 0.09, at Cascade Tunnel.

West Virginia.—The mean temperature was 72.4°, or slightly above normal; the highest was 97°, at Parkersburg on the 10th, and the lowest, 40°, at White Sulphur Springs on the 20th and Bloomery on the 29th. The average precipitation was 2.82, or 1.25 below normal; the greatest monthly amount, 5.69, occurred at Bluefield, and the least, 0.88, at Harpers Ferry.

Wisconsin.—The mean temperature was 69.0°, or 0.6° above normal; the highest was 102°, at Osceola Mills on the 4th, and the lowest, 31°, at Florence on the 19th and at Keopenick on the 24th. The average precipitation was 2.50, or 0.22 above normal; the greatest monthly amount, 6.32, occurred at Antigo, and the least, 0.75, at Gratiot.

Wyoming.—The mean temperature was 65.8°; the highest was 101°, at Fort Laramie on the 3d and Wheatland on the 14th, and the lowest, 25°, at Wheatland on the 26th. The average precipitation was 0.90; the greatest monthly amount, 2.52, occurred at Cheyenne, and the least, "trace," at Sheridan.

SPECIAL CONTRIBUTIONS.

EXPERIMENTS WITH KITES AT SAN FRANCISCO, CAL.

By W. H. HAMMON, Forecast Official (dated Sept. 19, 1896).

As early as February, 1896, Mr. Alexander McAdie began experiments at this station in flying kites for scientific purposes. With the aid of the San Francisco Examiner a team of over forty kites of the Eddy pattern were constructed. With the exception of two, of 9 feet beam, they were all of uniform size—68 by 60 inches. On February 19, 1896, the kites were taken to the summit of Mount Tamalpais, a small peak of 2,600 feet elevation, about 13 miles from the city, but the wind was too light to float the kites.

On February 22 the attempt was made to fly them from Sutro Heights, a bluff on the San Francisco side of the Golden Gate. Eighteen kites were let out in tandem, when the cord broke and the kites were lost. A dense fog afterward obscured the sky and prevented further experiments. However, it is believed that this is the largest team of kites ever flown in tandem. Early in March the writer, after having read vague descriptions of cellular kites, attempted to produce one. Having no knowledge of the methods of construction, one was made of somewhat elliptical or lune-shaped cells. The upper and lower surfaces of the cells were supported by light bamboo bows of about 90° arc, placed in the edges of the cells. Four of these bows attached at equal distances to the longitudinal ribs of the kite formed the frame for each surface. The kite was very efficient and light. One, 48 inches long and with 40-inch bows, containing nearly 18 square feet of area, weighed but 14 ounces when covered with No. 16 Irish hand linen paper. It could be flown to angles of from 45° to 70°, and remained very steady with winds from 7 to 22 miles per hour. With higher velocities the pressure of the wind upon the bows convex to the wind would distort the kite and cause it to dive. To prevent this, the bows of the lower side were extended beyond the ends of those forming the frame of the upper side of the cell. These ends were covered as well as the cell, thus forming wings to the kite.[1] The pressure of the wind against the kite caused the wings to bend backward; at the same time the two sides of the cells were spread farther apart. Thus the area of the kite normal to the wind was greatly reduced in winds of high velocity. This action tended to equalize the strain upon the string. The effective area of the kite would diminish about 40 per cent with an increase of wind velocity from 12 to 30 miles per hour. This effect was still further increased and the stability of the kite improved by the method adopted for attaching the string. Instead of using the usual bridle or bellyband, a stick was attached to the rear of the upper surface of the front cell and passed diagonally through the cell and allowed to extend from 16 to 18 inches below the lower surface. A flexible tube attached to the lower cell encased the stick, and to this tube the flying string of the kite was attached. As the upper and lower surfaces of the kite spread farther apart in high winds, the stick was withdrawn from the tube, thus shortening the bowsprit, which allowed the surfaces of the kite to become more nearly parallel to the wind. The bowsprit formed a rigid point of attachment for the string several inches in front of the surface of the kite, and also tended to increase its steadiness.

This kite has many advantages, but the continuous bending of the bows tends to loosen the joints which must be fastened by strings or wire, and the kite soon becomes less efficient. At the same time it is somewhat difficult to construct.

After reading the article by Prof. C. F. Marvin in the MONTHLY WEATHER REVIEW for November, 1895, experiments were made with the Hargrave and Potter designs of kites. It was found that with equal care in construction, kites of large size proved the more efficient. A slight inaccuracy in a long stick has less proportional effect than in a shorter one.

By the aid of an appropriation from the Weather Bureau, supplemented by a donation from the San Francisco Call, an attempt was made to fly a team of eight large cellular kites of three different patterns on July 4, 1896. Twenty-six pounds of piano wire was obtained (about 3½ miles in length). It was of sizes varying from .015 inch to .028 inch in diameter. It was made of pieces of from one-quarter to one pound each, joined together. The joints were made by sawing a deep

[1] See page 164 and Fig. 49, MONTHLY WEATHER REVIEW, for May, 1896.